Algebra 2 Trig. **Chapter 2 Review** **Name** Key

add constant / multiply constant

State whether each sequence is arithmetic, geometric or neither.

1. 9, 16, 25, ….
   ×1.77 ×1.5625; +7 +9
   neither

2. 2, 12, 72, ……
   ×6 ×6; +10 +60
   geometric ×6

3. 10, 20, 30, ……
   +10 +10
   arithmetic +10

Given the functions $f(x) = 3x + 4$ and $g(x) = \frac{2x}{3} + 5$ find the value of each expression below.

4. $f(-8)$
   $x = -8$
   $3(-8)+4$
   $-24+4 = -20$

5. $g(6)$
   $x = 6$
   $\frac{2(6)}{3}+5$
   $\frac{12}{3}+5$
   $4+5 = 9$

6. x if $g(x) = 9$
   $y = 9$
   $9 = \frac{2x}{3}+5$
   $4 = \frac{2x}{3}$
   $4(3) = 2x$
   $\frac{12}{2} = \frac{2x}{2}$
   $x = 6$

7. x if $f(x) = 25$
   $y = 25$
   $25 = 3x+4$
   $\frac{21}{3} = \frac{3x}{3}$
   $7 = x$

Solve each system of equations algebraically

8. substitution
   $y = 2x - 7$
   $5x - 4y = 19$
   $5x - 4(2x-7) = 19$
   $5x - 8x + 28 = 19$
   $-3x + 28 = 19$
   $-3x = 19 - 28$
   $\frac{-3x}{-3} = \frac{-9}{-3}$
   $x = 3$
   $y = 2(3) - 7$
   $y = 6 - 7$
   $y = -1$
   intersection: $(3, -1)$

9. elimination
   $3x + y = -2$
   $5x - 2y = -29$
   $2(3x + y = -2)$
   $+\ 6x + 2y = -4$
   combine
   $\frac{11x}{11} = \frac{-33}{11}$
   $x = -3$
   $3(-3) + y = -2$
   $-9 + y = -2$
   $y = -2 + 9$
   $y = 7$
   intersection: $(-3, 7)$

Find an equation to represent each table as a sequence with term 1 as its first term.

10. geometric

n	0	1	2	3
t(n)	3	12	48	192

×4 ×4 ×4

$t(n) = 3(4)^n$

11. +3 +1 +3

n	0	3	4	7
t(n)	–1	8	11	20

+9 +3 +9

arithmetic-add 3

$t(n) = 3n - 1$

12. arithmetic

n	0	1	2	3	4
t(n)	3	8	13	18	

−5 +5 +5 +5

−2

$t(n) = 5n - 2$

13. geometric

n	0	1	2	3
t(n)	7	14	28	56

×2 ×2 ×2

$t(n) = 7(2)^n$

Decide whether each of the following pairs of expressions or equations are equivalent.

14. $(4x^5)^3$ and $12x^{15}$ NO. $4^3x^{15} = 64x^{15}$

15. $(x+5)^2$ and $x^2+10x+25$ yes. $(x+5)(x+5)$ $x^2+5x+5x+25$ $x^2+10x+25$

16. $9x+3y=15$ and $y=-3x+5$ $\frac{3y}{3} \mid \frac{-9x+15}{3}$ $y=-3x+5$ yes.

17. $4x^2(2x^5)$ and $8x^{10}$ $4 \cdot 2 \cdot x^2 \cdot x^5$ $8x^7$ No.

State the x and y intercepts of the following.

18. $3x-5y=30$ $3x=30$ $x=10$ $-5y=30$ $y=-6$ (10,0) and (0,-6)

19. $y=x^2-9$ $0=(x+3)(x-3)$ $x=-3$ $x=3$ x-int: (-3,0) and (3,0) $y=0^2-9$ $y=-9$ y-int: (0,-9)

Convert each percent increase or decrease into a multiplier.

20. 25% increase (add) .25 $1+.25=1.25$

21. 8.2% increase (add) .082 $1+0.082=1.082$

22. 7% decrease (subtract) .07 $1-.07=.93$

A ball was dropped from various heights and the data was recorded in the table below. All distances are measured in inches.

Drop Height	50	25	70	95	120	150
Rebound Height	41	20.5	57.4	77.9	98.4	123

23. What is the rebound ratio for their ball? $\frac{\text{rebound height}}{\text{drop height}} = .82$ $\frac{41}{50}=.82$ $\frac{20.5}{25}=0.82$ $\frac{123}{150}=.82$

24. Predict how high the ball will rebound if it is dropped from 40 inches. $40 \text{ inches}(.82) = 32.8 \text{ inches}$

25. If the rebound height is 65.6 inches, from what height was it dropped? $RH=.82(DH)$ $\frac{65.6}{.82}=DH$ DH = 80 inches

26. If the ball was dropped from 200 inches, how high would it rebound:

on the 1st bounce 164 in $200 \text{ inches}(.82)$

on the 2nd bounce 134.48 in $200(.82)^2$

on the 3rd bounce 110.27 in $200(.82)^3$